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$$x_1^2+x_2^2+x_3^2+3(x_1x_2+x_2x_3+x_3x_1)=0.$$

To this conic the triangle B_1, B_2, B_3 (or E_1, E_2, E_3) bears the same relation as the original triangle A to the original conic, *i. e.* the tangents to the conic at B_1, B_2, B_3 (or E_1, E_2, E_3) pass through C_1, C_2, C_3, respectively.

Likewise the conic

$$x_1^2+x_2^2+x_3^2-2(x_1x_2+x_2x_3+x_3x_1)=0$$

is inscribed in the two triangles A and D. The lines joining the contact points of these two triangles pass again through C_1, C_2, C_3. In this way we obtain an infinite chain of conics Γ. All these conics Γ pass through the same points ω_1, ω_2 on the line ω, and since the point O is the pole of ω with respect to every conic, the conics Γ are tangent to each other at ω_1 and ω_2.

If we transform by projection the original conic into a circle and simultaneously the line ω into the line at infinity, which is always possible, then the conics Γ are projected into conics passing through the two circular points at infinity where they are tangent to each other, *i. e.* into concentric circles. The inscribed and circumscribed triangles of the diagram are transformed into equilateral triangles.

From this system of concentric circles with inscribed and circumscribed triangle all the properties of the diagram involving the conics Γ can now easily be deduced.

If we take as original conic an ellipse and as line ω the line at infinity, the point O becomes the center of the ellipse and also the point of intersection of the medians of every triangle A_1, A_2, A_3, and it can easily be shown not only that all these triangles are of equal area, but also that this area represents the maximum value of the areas of all triangles inscribed into the ellipse.

THE UNIVERSITY OF CHICAGO, *November, 1905.*

A PERFECT MAGIC SQUARE.

By PROFESSOR F. ANDEREGG.

In the accompanying magic square, the sum of the numbers in any line, column, or diagonal is the same (2056). Instead of continuous lines, any four numbers can be taken from the first and third groups of four numbers, and any four from the second and fourth groups in the first line, and the corresponding numbers in the last line. Similar combinations can be made for the second and fifteenth lines, the third and fourteenth, etc. Similar combinations can also be made for the columns.

Instead of a complete diagonal two incomplete diagonals can be taken on opposite sides of either complete diagonal so that the two together contain sixteen numbers.

The sum of the sixteen numbers in any four two-squares symmetrically situated with respect to the center of the sixteen-square is 2056. The sum of the sixty-four numbers in any eight-square taken at random, or of any four four-squares symmetrically situated with respect to the center of the sixteen-square is 8224.

1	2	3	4	248	247	246	245	73	74	75	76	192	191	190	189
17	18	19	20	232	231	230	229	89	90	91	92	176	175	174	173
33	34	35	36	216	215	214	213	105	106	107	108	160	159	158	157
49	50	51	52	200	199	198	197	121	122	123	124	144	143	142	141
128	127	126	125	137	138	139	140	56	55	54	53	193	194	195	196
112	111	110	109	153	154	155	156	40	39	38	37	209	210	211	212
96	95	94	93	169	170	171	172	24	23	22	21	225	226	227	228
80	79	78	77	185	186	187	188	8	7	6	5	241	242	243	244
181	182	183	184	68	67	66	65	253	254	255	256	12	11	10	9
165	166	167	168	84	83	82	81	237	238	239	240	28	27	26	25
149	150	151	152	100	99	98	97	221	222	223	224	44	43	42	41
133	134	135	136	116	115	114	113	205	206	207	208	60	59	58	57
204	203	202	201	61	62	63	64	132	131	130	129	117	118	119	120
220	219	218	217	45	46	47	48	148	147	146	145	101	102	103	104
236	235	234	233	29	30	31	32	164	163	162	161	85	86	87	88
252	251	250	249	13	14	15	16	180	179	178	177	69	70	71	72

OBERLIN COLLEGE, *April 26, 1905.*